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ABSTRACT

This research focused on an institutional structural process and its relationship to sex differences in mathematics achievement. Instructional grouping by class and school interacted with curriculum and achievement. The sample consisted of 906 students in grades kindergarten through sixth in two elementary schools. Results showed that primary grade girls scored higher ($p < .01$) in a program with continuous student progress, individualized or modified group settings, pacing set by criterion tests, and a sequential, coordinated math curriculum. Lowest female achievement occurred in the traditional program with whole class instruction, adherence to grade level material, and little coordination between grades. Boys achieved equally well in both schools. (Author)

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# THE EFFECTS OF INSTRUCTIONAL GROUPING ON THE MATHEMATICS ACHIEVEMENT OF FEMALE AND MALE ELEMENTARY STUDENTS

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## I. INTRODUCTION

Sex-related differences in mathematics achievement have been intensively researched for more than a decade. Differences have been noted using a variety of research instruments including (1) tests of computation skills, concepts, spatial ability and problem solving, (2) questionnaires about math interests and attitudes, and (3) surveys of course selection in high school and college. Generally, differences found at about the seventh grade and increasing through high school have been more significant than those found at primary and intermediate grade levels.

The variety and inconclusiveness of findings thus far as well as the social implications of the topic have encouraged continuing research. The purpose of this study was to investigate the interaction of instructional grouping with curriculum and achievement in the elementary grades.

## II. REVIEW OF THE LITERATURE

Recent research has been conducted within the nature-nurture paradigm, seeking causation in biological inheritance or the socialization processes. However, studies by Maccoby and Jacklin (1974), Sherman (1978) and Wittig and Petersen (1979) indicate that neither biological nor socialization theories of causation can be independently substantiated. Therefore, Petersen (1979) has proposed a combined model of biopsychosocial influences, all interacting in one direction to cause lower math achievement by females.

Interest in biological causes has been revitalized by Benbow and Stanley (1980) who reported on the disproportionately high number of boys identified as intellectually gifted in mathematics. In the Study of Mathematically Precocious Youth conducted by Stanley and others over the past eight years at Johns Hopkins University with a sample of almost 10,000 junior high school students, boys outnumbered girls two to one in scores over 500 on the Scholastic Aptitude Test in Mathematics (SAT-M), a college entrance examination designed for eleventh and twelfth grade students. Benbow and Stanley stated "we favor the hypothesis that sex differences in achievement in attitude toward mathematics result from superior male mathematical ability, which may in turn be related to greater male ability in spatial tasks"(p.1264). Thus, the lack of high scoring females, which accounted for much of the sex difference on the SAT-M, was explained by inherently superior male mathematical ability.

Benbow and Stanley assumed that girls and boys received the same amount of formal training in mathematics with essentially identical instruction until the seventh grade. However, other findings suggest that schooling processes have differential effects on the mathematics achievement of girls and boys in the elementary grades. Stevenson et al.(1976) examined the predictive validity of selected cognitive tests at the pre-Kindergarten level. They found that before entering Kindergarten, girls score higher than boys on most verbal and mathematical tests, and that the correlation between reading and arithmetic scores was high for both girls and boys ($r \approx .70$). By the third grade, however, the correlation for

girls had dropped by half (r=.35), and the correlation for boys remained stable (r=.70). Leinhardt et al. (1979) studied teacher interactions with girls and boys in reading and math in thirty-three second grade classrooms. They found that teachers made more "academic contacts" with boys. Thus they observed that teacher behaviors were differentially applied depending upon the sex of student and the subject being taught. Fennema and Sherman (1978) investigated two cognitive variables and eight affective variables in their junior high study of sex-related differences in mathematics achievement. They found significant sex-related differences for two affective variables, Confidence in Learning Mathematics and Mathematics as a Male Domain. Further analysis showed that their results were related to the school of attendance. They concluded that "further research is needed into the factors within a school milieu that might contribute to the negative effects on girls in relation to mathematics learning" (p.202).

Some sociological studies have investigated organizational processes which are relevant to the differential effects of schooling processes. In his discussion of the school as an agency of socialization and allocation, Parsons (1959) described the processes by which the school class functions. He hypothesized that the primary process occurs when the classroom teacher provides students a common set of tasks, observes their performance, selectively rewards achievement, and brings about a status system in the class based on student achievement. Blau (1960) described the relationship between social values and the values of the individual in an organizational setting. This study provides insights into how an organization (the school) may

transfer common values to the individual (the teacher). In her case study of a large corporation, Kanter (1977) described the structural determinants of behaviors in an organization as (1) opportunity, (2)power,and(3)proportions; the behavior of individuals was related to the characteristics of the organization. This study provides a model by which one might, by analogy, consider the structural effects of the schooling process on mathematics achievement of girls and boys in elementary schools.

A field study by this author (Saltzen, 1978) demonstrated that across-grade instruction was a school practice which differentiated school organization. Some schools had a "continuous progress" program in which students work sequentially through the math curriculum. For example, second grade students could progress through math materials which were designated first, second, third or fourth grade. The grade assignment of the student was not directly related to the graded level of the materials (this defines "across-grade" instruction). Most schools, however, had an instructional program in which students were limited to materials at their grade level.

## III. RESEARCH DESIGN

This research was designed to identify and evaluate some of those "factors within the school milieu" referred to by Fennema and Sherman which might result in differential achievement for girls and boys. Because it was an exploratory, descriptive study, research questions (rather than an hypothesis) guided the collection and analysis of data. Will achievement vary with the type of instructional group?

Will achievement vary with the type of school-wide organizational pattern?

Seven northern California schools were surveyed by questionnaire during February and March, 1980 to identify contrasting instructional programs in two schools. Contrasts were sought in the organization of the math curriculum school-wide and the organization of instruction in each classroom. Teachers were asked to rank their math groups, to indicate the number of girls and boys in each group and to identify the math text or workbook in use. The survey included three schools K-6 (Kindergarten and grades one through six) and four schools K-8 (Kindergarten and grades one through eight). The schools varied in size from 200 to 550 students, with the number of math classes ranging from ten to twenty-three.

Classes with across-grade instruction were identified by comparing the grade level of students with the grade level of the textbooks being used. One of the two schools chosen for this study had across-grade instruction in most of the classes; the other, contrasting school had no across-grade instruction but was similar in size and range of grades. Four types of instructional organization were described by the teachers surveyed: (1) whole class, in which all students in the class were instructed in the same concepts and skills each day, (2) grouped, in which students were divided into two or more groups for different instruction, (3) individualized, in which students were instructed in skills and concepts on an individual schedule, and (4) a combination of whole class, grouped, or individualized.

Table 1 shows the differences and similarities between the two schools selected for this study. School I had a K-6 student population

TABLE 1. Comparison of School I and School II.

| | School level characteristics | | | Organization of instruction | | | | Across-grade instruction |
|---|---|---|---|---|---|---|---|---|
| School | STUDENTS | MATH CLASSES | GRADES | WHOLE CLASS | GROUPED | INDIVI-DUALIZED | COMBIN-ATION | NUMBER OF CLASSES |
| I | 493 | 18 | K-6 | 8 | 3 | 3 | 4 | 0 |
| II | 413 | 15 | K-6 | 0 | 4 | 5 | 6 | 13 |

of 493 students in eighteen classes. Eight classes were taught as a whole, three were grouped, three were individualized, and four were taught using a combination of the types of instructional organization. None of the classes had across-grade instruction. School II had a student population of 413 students in fifteen math classes, grades Kindergarten through sixth. None of the classes were taught as a whole, four classes were grouped, five were individualized and six were a combination. Thirteen of the classes (85%) had across-grade instruction.

In April 1980, all students in both schools were administered a standardized mathematics test as part of district mandated testing programs. In School I, the Comprehensive Tests of Basic Skills (CTBS) was used in grades three through six. At my request, the appropriate levels of the CTBS Math subtests were administered in the Kindergarten and grades one and two by a trained substitute teacher known in the school. In School II, the Stanford Achievement Tests (SAT) were administered in grades three through six, and, for the first time, in the Kindergarten and grades one and two.

Since the schools used different tests with different norming populations, different score distributions and different scaling, it was necessary to find a common metric by which between-school comparisons could be made. Such a metric was developed by the United States Department of Education for Title I evaluations (Tallmadge, 1978). This metric, Normal Curve Equivalents (NCEs) was linked directly to the percentile scales, so the NCEs of 1, 50 and 99 exactly match their percentile counterparts, with a mean of 50 an a standard deviation of 21.06. The percentile scores in this study were converted into their

Normal Curve Equivalents which were used in the t-tests and analyses of variance for between-school comparisons.

In May 1980, all teachers of mathematics were interviewed, fifteen in each school. The interviews provided information about (1) the daily organization of mathematics instruction, (2) the continuity of instructional practices throughout the school year, (3) grouping criteria (4) class placement criteria (5) teacher opinions about grouping, (6) teacher opinions about sex differences.

## IV. THE ORGANIZATION OF INSTRUCTION

### Materials of instruction

The curriculum for mathematics was determined at the district level for both schools. In School I, the teachers were required to use the Holt, Rinehart and Winston series, Understanding Mathematics in all classes. This math program consisted of graded textbooks, workbooks, mastery tests, and student record forms. Teachers were required to use the textbooks and workbooks designated for their grade level, but the use of mastery tests and student record forms was optional. Only five teachers reported using the mastery test and record forms regularly; all teachers used the other materials as required, and some used supplementary materials as well. The teachers were divided in their opinions of the materials used.

In School II, teachers were required to use the Scott, Foresman series, Mathematics Around Us in all classes except Kindergarten. They used the complete set of textbooks, workbooks, mastery tests and student record forms. All teachers spoke positively of the materials

used.

Kindergarten

Students in both schools were grouped for instruction within each classroom. Kindergarten teachers in School I reported that the classes were divided into three groups and that all students in the three groups received the same instruction each day. However, the teachers also reported that when students finished assignments at different times, the "better" students worked on special topics such as money, measurement, and time. Thus, all Kindergarten students were taught the same basic material in the readiness book, but the "better" students received more instruction. Group placement criteria were not identified by the teachers.

Kindergarten teachers in School II reported that a teacher-made screening test was administered during the first month of school. Test items included (1) identification of shapes and colors, (2) recognition of numbers in random order, (3) counting with objects, and (4) understanding large-small, long-short and other comparative concepts. As a result of this test, as well as teacher observations of student behavior and personality, students were placed into one of four instructional groups within each classroom.

In School I, the teachers did not report any movement between groups during the school year. In School II, the afternoon teachers reported moving a total of ten students during the year, four to a higher group and six to a lower. Most movement occurred between the low and middle low groups; the high and middle high groups remained

unchanged throughout the year.

Primary grades

In School I, seven of the eight classes in first, second and third grades were taught as a whole group. The characteristics of instruction common to these classes were as follows:

> The teacher introduced the daily lesson to the class by using the chalkboard to illustrate and explain. Often students were asked to work sample problems on the board. The amount of teacher time used for direct instruction varied with the newness of the concept or skill. For the remainder of the period, all students worked on the same assigned pages in their workbooks. Students who finished their assignments before the others were given additional math problems, or a math game, or "free time" activities of their choice. Students having difficulty with the assigned work received extra help from the teacher at a separate table; if not finished when the bell rang, they were given extra time during recess, lunch or after school. Students who finished early were the same students each day and were identified by the teacher as high in math; conversely, the students who had difficulty finishing were identified as low.

In School II, all eight primary classes had across-grade instruction in mathematics. All types of grouping practice (individualized, small groups or some combination of types) were used to accomodate across-grade instruction. The characteristics of instruction were as follows:

> Students were placed in the math program at an individually determined level based on prior work and pretests. Each student received instruction from a teacher or assisting teacher before beginning an assignment. Work was corrected as completed and errors were explained individually to each child. Mastery tests were used regularly with a passing score of 80% and the scores were recorded on individual student forms. Students worked continuously throughout the class period; after completion of an assignment, another was begun.

Intermediate grades

In School I, all four types of classroom organization were used in fourth, fifth and sixth grades. The characteristics of instruction, by

grade level, were as follows:

> The fourth grade classes were taught as whole groups, following the same procedures as described for the primary classes. In addition, supplemental self-paced instruction was provided in two of three classrooms using workbooks from another publisher. All students were given these supplemental materials, not just the "better" students.
>
> In the fifth grade classes, two teachers used individualized instruction. Students began work immediately without instruction and individual help was provided upon request. Pre- and post-tests were used and standard mastery levels were required. Individual record forms were used. Five student helpers were selected from the high achieving students and all were girls. These girls were regarded as "secretaries" to the teacher and were viewed as indispensable to the smooth functioning of the program. The teacher who grouped students did so on the basis of pre-tests. Each group received instruction before independent work. Students corrected their own work with the teacher explaining problems missed. The pacing of instruction followed the Holt series chart.
>
> Sixth grade math classes were taught by one teacher in a departmentalized setting with each class divided into high and low groups. The high groups were provided individualized instruction, but the low groups progressed together page by page. Students who finished their assignments early worked on math puzzles, extra pages in the textbook, or other school work. Students were evaluated only on work completed during classtime; no assignments were to be done after school or at home.

In School II, three types of classroom organization were used; there was no whole group instruction. The characteristics of instruction, by grade level, were as follows:

> The fourth grade math classes were organized for individualized instruction. Students were placed in the third, fourth, fifth or sixth grade textbooks depending upon the level attained in third grade. One class was assisted by a student teacher during the math period; another, by an occasional parent volunteer. The math period began with each student working on an individualized assignment with help provided upon request. The teachers reported that most students required more instruction than they were able to provide during the math period. Because daily instruction was necessary using four different textbooks, additional teachers or aides were needed to supply the desired instructional time. But additional personnel were not

available; as a result, much homework was required and parents were asked to assist.

One fifth grade class was organized in the same manner as the fourth grade classes above. The other fifth grade class was divided into four groups. Instruction for the whole class was followed by independent seatwork. Students who finished their weekly assignment, worked on other subjects such as spelling or reading; those who did not finish were placed on the detention list and required to stay after school. Two high achieving girls were class helpers during the math period.

One sixth grade class was divided into five groups, with all assigned work in the sixth grade textbook. Students were grouped on the basis of learning needs using a teacher-made test. Students who regularly finished their assignment before the end of the class period were tested for placement in a higher group. Students who didn't finish their assignments in class were expected to do them at home. The lowest group was the most structured with all students on the same page each day; the other groups were more individualized. The teacher reported considerable movement among all groups except the lowest.

The other sixth grade class was described by the teacher as "individualized on a controlled basis" with students placed in fourth, fjfth, sixth or seventh grade textbooks according to achievement level. Students who finished their assignment before the end of the period were expected to do other school work. Students who did not finish their assigned work were placed on the detention list.

Structure of rewards (Primary)

Both School I and School II had reward structures characteristic of their instructional plans.

In School I the learning content and pace was limited to the grade level of the textbook. Some students who already knew the concepts or skills in the assignment completed the work pages before the others. These students were rewarded with grades or symbols such as stars on the assigned work pages, a validation of their status which occurred daily and was known to all. In addition, they were rewarded with "free time", time in which they could display their high status to the rest of the students. They were permitted

to choose special materials or activities, play a math game, or socialize with their high status peers.

In School II, the content and pace of learning was largely dependent on how much the students worked and on how much they accomplished. To maintain high status with its attendant rewards, students had to be further ahead than other class members, and also had to stay ahead. Students were allowed to take their work home, to work ahead, and thus could change their status with extra time and effort. The possibility of a change of status (downward as well as upward) motivated most students. Teachers remarked about the enthusiasm of the children during the math period; they remarked that it was a daily battle to get the kids out the door to recess and lunch, that they were very competitive, eager to finish a unit, take the test, and move on to a higher level. This behavior was observed in most of the children.

Structure of rewards (Intermediate)

In School I students who finished their class assignment in the regular math series worked in another math series at an individual pace. The supplementary workbook was available to all students (rather than just the "better" students) and extra class time was provided on most days. Students corrected their own work, took frequent mastery tests, recorded the scores, and were required to achieve a standard of 80% before moving on to the next level. In the sixth grade, however, those who didn't finish their assignments in class were graded only on work completed with no opportunity for homework or after school "catch up"; most of these students were in Group 2 in which all had the same daily assignment.

In School II, the students were not only rewarded for learning, they were also punished for not learning. Six of the seven intermediate teachers had devised a detention system for those students who did not complete a specified amount of work each week. These students were required to stay after school two hours on Wednesday, and sometimes denied physical education periods or field trips; they were to use the time to finish assignments. The one teacher who did not participate was a sixth grade teacher who grouped the students and provided instruction before independent work.

## V. TEACHER PERCEPTIONS OF SEX DIFFERENCES

Teachers were asked if they had observed any differences in the way girls and boys learn mathematics. Four types of teacher perceptions emerged from their responses.

1. Developmental differences: girls mature faster than boys and therefore perform better in math.
2. Innate differences: boys are better; they are more eager than girls, easier to teach and like math better.
3. Variable differences: girls are better one year and boys the next; it varies with year and class.
4. Individual differences: students vary greatly but the differences are individual and not related to sex.

Table 2 shows that nine teachers perceived no sex differences, seven teachers perceived developmental sex differences, seven

TABLE 2. Teacher perceptions of sex differences in mathematics achievement.

| Perceived Differences | Number of teachers | | | | |
|---|---|---|---|---|---|
| | Primary | | Intermediate | | |
| | School I | School II | School I | School II | Total |
| Developmental | 2 | 1 | 2 | 2 | 7 |
| Innate | 5 | 1 | 0 | 1 | 7 |
| Variable | 1 | 1 | 4 | 1 | 7 |
| Individual (not sex-related) | 0 | 5 | 1 | 3 | 9 |

innate differences, and seven variable differences. Five of the eight primary teachers in School II perceived that differences were individual only. And five of the eight primary teachers in School I perceived that boys were better. The differences in teacher perceptions roughly matched the differences in school-wide organizational plans. The greatest differences in perceptions were between the primary teachers of School I and those of School II.

## VI. TEST RESULTS

### Comparisons between girls and boys

Table 3 shows the results of t-tests for three subtests (computation, concepts and applications) and for total math scores using scale score means. The number of girls and boys tested, means, standard deviations, t-values and two-tail probabilities are shown. No statistically significant differences were found between girls and boys in either school on any of the subtests or on the total math score.

Table 4 shows the results of chi-square tests with values and level of significance by school and grade for girls and boys. Differences between them were analyzed using frequencies of grouped percentile ranks. The observed frequencies deviated significantly from expected frequencies only in the sixth grade in School II.

TABLE 3. T-test comparisons between scale scores by subtest and sex.

| School 1 | Sex | Frequency | Means | Standard Dev. | T-values | 2-tail prob. |
|---|---|---|---|---|---|---|
| Computation | Girls | 223 | 405.37 | 91.03 | 0.73 | 0.467 |
| | Boys | 200 | 399.20 | 82.23 | | |
| Concepts | Girls | 221 | 404.89 | 111.92 | -0.30 | 0.763 |
| | Boys | 198 | 408.23 | 114.24 | | |
| Applications | Girls | 171 | 449.95 | 87.12 | -1.11 | 0.270 |
| | Boys | 149 | 460.99 | 91.26 | | |
| Total Math Score | Girls | 248 | 383.98 | 106.01 | -0.09 | 0.932 |
| | Boys | 222 | 384.81 | 102.67 | | |
| School 2 | | | | | | |
| Computation | Girls | 156 | 156.77 | 22.64 | 1.55 | 0.122 |
| | Boys | 195 | 153.20 | 20.31 | | |
| Concepts | Girls | 156 | 153.52 | 25.50 | 0.58 | 0.560 |
| | Boys | 195 | 152.03 | 22.43 | | |
| Applications | Girls | 130 | 157.82 | 21.77 | -0.81 | 0.421 |
| | Boys | 163 | 159.84 | 20.92 | | |
| Total Math Score | Girls | 183 | 146.70 | 26.21 | -0.59 | 0.553 |
| | Boys | 216 | 148.19 | 23.69 | | |

TABLE 4. Chi-square comparisons by sex, grade and school

| Grade | School I $X^2$ values | School I Significance | School II $X^2$ values | School II Significance |
|---|---|---|---|---|
| K | 5.0795 | 0.2792 | 5.6940 | 0.2231 |
| 1 | 4.5306 | 0.3389 | 1.9912 | 0.7374 |
| 2 | 4.4604 | 0.3473 | 5.5154 | 0.2384 |
| 3 | 5.5819 | 0.2326 | 2.4829 | 0.6477 |
| 4 | 3.1280 | 0.5360 | 4.3610 | 0.3593 |
| 5 | 1.525 | 0.8221 | 4.3726 | 0.2239 |
| 6 | 1.4990 | 0.8268 | 10.9653 | 0.0270* |

*$p < .05$

Comparisons between schools

Table 5 shows the results of t-tests for nine compared groups with the number of students tested, the means, standard deviations, t-values and two-tail probabilities. Significant differences were found between School I and School II girls, primary students, and primary girls. The difference between School I and School II primary boys was not significant.

Table 6 shows the results of three analyses of variance. F-values and their related probabilities were derived for (1) all students, (2) all primary students, and (3) all intermediate students using school, group types and sex for variance. Statistically significant differences between schools were found for (1) all grades, (2) primary grades and (3) group types in the primary grades. The significance of group types at the primary level probably is accounted for by the predominantly whole class instruction in School I (see Table 1). There were no significant differences among group types at the intermediate level.

TABLE 5. T-test comparisons between schools, primary and intermediate levels.

| Groups | SCHOOL I N | Means | S.D. | SCHOOL II N | Means | S.D. | T-value | Prob.[1] |
|---|---|---|---|---|---|---|---|---|
| All students | 493 | 51.55 | 19.97 | 413 | 54.06 | 21.81 | -1.81 | .071 |
| All girls | 259 | 51.11 | 19.32 | 187 | 54.95 | 22.05 | -1.95 | .052* |
| All boys | 234 | 52.04 | 20.70 | 226 | 53.32 | 21.64 | -0.65 | .516 |
| Primary students | 217 | 49.34 | 19.70 | 223 | 55.98 | 22.99 | -3.25 | .001* |
| Primary girls | 111 | 47.95 | 19.18 | 105 | 56.63 | 23.40 | -2.99 | .003* |
| Primary boys | 106 | 50.80 | 20.22 | 118 | 55.41 | 22.71 | -1.60 | .112 |
| Intermediate students | 276 | 53.29 | 20.04 | 190 | 51.80 | 20.17 | +0.78 | .433 |
| Intermediate girls | 148 | 53.49 | 19.14 | 82 | 52.81 | 20.12 | +0.25 | .802 |
| Intermediate boys | 126 | 53.06 | 21.12 | 108 | 51.04 | 20.26 | +0.75 | .456 |

[1] two-tail probabilities

* $p < .05$

TABLE 6. Analyses of variance: school by group types by sex.

| Variables | All grades F value | Sign. | Primary (K-3) F value | Sign. | Intermediate (4-6) F value | Sign. |
|---|---|---|---|---|---|---|
| Schools | 5.950 | 0.015* | 11.144 | 0.001* | 0.404 | 0.525 |
| Group types | 0.944 | 0.419 | 3.432 | 0.017* | 0.139 | 0.937 |
| Sex | 0.379 | 0.539 | 0.205 | 0.651 | 0.233 | 0.630 |
| School x Group types | 0.184 | 0.832 | 0.706 | 0.401 | 0.197 | 0.657 |
| School x Sex | 0.351 | 0.554 | 0.569 | 0.451 | 0.386 | 0.534 |
| Group types x Sex | 2.373 | 0.069 | 1.968 | 0.118 | 1.736 | 0.159 |
| School x Group types x Sex | 0.935 | 0.393 | 0.200 | 0.655 | 0.056 | 0.812 |

* $p < .05$

## VII. SUMMARY

As indicated by the research questions (pp.4,5), differential effects of grouping practices had been anticipated. And significant differences were found among instructional group types. But differential effects were found only at the primary level and only for girls; this was unanticipated.

Teacher interviews provided the descriptive information necessary to assess the unanticipated effects resulting from the interaction of instructional grouping with curriculum and achievement. In School I, the organizing principal was grade-level achievement; primary students were constrained by the limit thus placed on their learning pace and the "better" students were rewarded with non-learning and non-work time. In School II, the organizing principal was individual achievement; the primary students were paced by levels achieved and students were rewarded with the opportunity for further achievement. When the organization of instruction included a coordinated curriculum, across-grade instruction, frequent mastery tests with systematic student records, and rewards for achievement only, primary girls excelled. There were no significant differences for boys.

The assumption of Benbow and Stanley that girls and boys receive identical instruction in levels below the seventh grade is contradicted by this study. Though both sexes were in the same classrooms and were treated similarly by teachers, differential effects for girls occurred at the earliest grades. With achievement-paced instruction, the girls who attained higher levels received

more instruction.

Parsons' model of schooling processes was supported only as it relates to boys. This finding deserves a more detailed discussion than is possible in this brief paper; it will be fully examined in my forthcoming dissertation.

The findings of this study were based upon a small, selected sample and should not be generalized to a larger population. The questions raised, the unanticipated results, and the suggestive data may be of importance. Further research is indicated.

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